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Major, minor and trace element concentrations in leaves of Lavandula stoechas collected from Senhaja Srair region (North of morocco) by INAA and ICP-MS.

Tuesday, 15 November 2022 17:45 (15 minutes)

1. Introduction (section 1) 10 pt Bold This study aimed at analyzing the concentrations of macro and trace elements in Lavandula stoechas medicinal plant from Lamaceae family grown in Senhaja Srair region in the Moroccan Central High Rif. To estimate and evaluate the concentration of Na, K, Mg, Mn, Cl, Ca , heavy metals and rare earth elements two analytical techniques are used such as k0-standardisation method of neutron activation analysis (K0-INAA) and inductively coupled plasma-mass spectrometry (ICP-MS) at CNESTEN-Morocco. For K0-NAA, Irradiations for 5 hours have been carried out using neutrons of the Triga Mark II research reactor and the induced activity was counted using High Purity Germanium (HPGe) detectors. For ICP-MS, 0.300 g of sample was digested in acid (HNO3 supra-pure 65%, and of H2O2 supra-pure 30%) at high pressure and temperature by a microwave speedweve. The standard reference material (peach leaves NIST 1547) has been used to check the accuracy and precision of the measurement methods. A good agreement between the experimental results and certified values was observed for K0-NAA and ICP-MS both.
2. Results

Results obtained in this study confirmed the presence of more than 20 elements in lavandula stocheas sample. The elements detected were classified into essential elements (Ca, Cl, Co, Cr, Fe, K, Mg, Mn, Na, and Zn), high and low toxicity elements (Al, As, Br, Cs, Sb, V, Hf, Th, Sc), and rare earth elements (La, Ce, Nd, Sm, Eu Tb, Yb).
Ca, Cl, K, Mg, Na, Fe, Mn, and Al are reflected in the high mineral content of the lavandula stocheas sample, while Cr, Co, Cs, and rare earth and other elements are present in lower concentrations. Figure 1 shows the comparison of determined concentration in this study and the result obtained by Embarech & al [1] of each of principal macro elements.

1. References

[1] K. Embarch1, M. El Mzibri1, K. Lalaoui1, M. Bounakhla, A. Gaudry, S. Ayrault, M. Moskura, M. Hmamouchi. Determination Of Trace- And Macro-Elements In Moroccan Medicinal Plants By The Ko- Neutron Activation Analysis Method. Phys. Chem. News .(2009) 45, 09-16.

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